AMENDMENTS TO THE CLAIMS

1. (Currently Amended) An apparatus for detecting a fault of an optical switch, the apparatus comprising:

an optical monitoring signal generator that generates optical monitoring signals having a ~~different wavelengths~~ first wavelength, the first wavelength different from wavelengths of optical signals including data to be transmitted;

a coupler that optically couples the optical monitoring signals to the optical signals including data to be transmitted and inputs the coupled optical signals to an optical switch;

a splitter that splits the optical monitoring signals from optical signals output from the optical switch, the split optical monitoring signals having the first wavelength;

a plurality of optical detecting and output power transition sensing units that detect output power transitions of the split optical monitoring signals; and

a fault determiner that receives information on settings of the optical switch from an external source, compares the information with the detected output power transitions of the split optical monitoring signals, and determines whether the optical switch malfunctions depending on whether the information coincides with the detected output power transitions of the split optical monitoring signals.

2. (Original) The apparatus of claim 1, further comprising an error signal generator that generates an error signal corresponding to a fault-determining signal received from the fault determiner.

3. (Original) The apparatus of claim 1, wherein at least one of the coupler and the splitter is a wavelength division multiplexing coupler.

4. (Original) The apparatus of claim 3, wherein the optical switch is an optical micro-electro-mechanical system switch.

5. (Original) The apparatus of claim 1, wherein the optical switch is an optical micro-electro-mechanical system switch.

6. (Currently Amended) A method of detecting a fault of an optical switch, the method comprising:

(a) generating optical monitoring signals having a first wavelength different ~~wavelengths~~ from wavelengths of optical signals including data to be transmitted;

(b) optically coupling the optical monitoring signals to the optical signals with data to be transmitted and inputting the coupled optical signals to an optical switch;

(c) splitting the optical monitoring signals from optical signals output from the optical switch and detecting output transitions of the split optical monitoring signals the split optical monitoring signals having the first wavelength; and

(d) receiving information on setting the optical switch from an external source, comparing the information with the detected output power transitions of the split optical monitoring signals, and determining whether the optical switch malfunctions depending on whether the switching information coincides with the detected output power transitions of the split optical monitoring signals.

7. (Original) The method of claim 6, after step (d), further comprising generating an error signal corresponding to a fault determining signal.

8. (Original) The method of claim 6, wherein at least one of steps (b) and (c) is performed using a wavelength division multiplexing coupler.

9. (Original) An apparatus for detecting a fault of an optical switch, the apparatus comprising:

a splitter that splits a plurality of optical signals output from an optical switch;

a plurality of optical detecting and output power transition sensing units that detect output power transitions of the split optical signals; and

a fault determiner that receives information on setting the optical switch from an external source, compares the information with the detected output power transitions of the split optical signals, and determines whether the optical switch malfunctions depending on whether the information coincides with the detected output power transitions of the split optical signals.

10. (Original) The apparatus of claim 9, further comprising an error signal generator that generates an error signal corresponding to a fault-determining signal received from the fault determiner.

11. (Original) The apparatus of claim 9, wherein the plurality of optical detecting and output power transition sensing units detect output transitions of amplified spontaneous emission signals generated by optical amplifiers positioned at input ports of optical switching systems such as optical cross-connectors.

12. (Original) The apparatus of claim 9, wherein the fault determiner receives information on setting the optical switch from an external source, compares the information with the detected output transitions of the split optical signals or output transitions of the amplified spontaneous emission signals, and determines whether the optical switch malfunctions depending on whether the switch setting information coincides with the detected output transitions of the split optical signals or the output transitions of the amplified spontaneous emission signals.

13. (Original) The apparatus of claim 9, wherein the optical switch is an optical micro-electro-mechanical switch.